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Title : Hand Dryer

Claims

1. A hand dryer comprising: a processing space in which hands are inserted or extracted, a high-pressure air current generator that provides working air current, and a blowing nozzle that includes protrusion portions arranged near both edges of the blowing hole in a width direction to reduce a flow path of the blowing hole and that provides working air current from the high-pressure air flow generator to the processing space through the blowing hole.

2. The hand dryer according to claim 1, wherein the blowing hole is constituted of a slit arranged in a width direction of the processing space.

3. The hand dryer according to claim 1 or 2, wherein the plurality of blowing holes is arranged in the width direction of the processing space.

4. The hand dryer according to claim 1 or 2, wherein the blowing holes are arranged in a front-back direction and in the width direction of the processing space.

[0004]

In the conventional hand dryer including the above-described configuration, it is possible to quickly dry wet hands through motion energy of high-speed air current, however, air current jetted from a blowing hole of a blowing nozzle does not hit the whole hands inserted into a hand insertion unit and drying efficiency is not good. When the blowing hole is increased in width, it is possible to expand a range of drying hands. However, speed of air current becomes slow. On the other hand, when the blowing hole is reduced in width, flow rate is increased, and a force to blow away waterdrops attached to surfaces of hands is large, noise is increased.

[0005]

The present invention is made to solve the problems. It is an object of the present invention to provide a hand dryer that increases drying efficiency without reducing wind speed of high-speed air current jetted from the blowing hole, reduces noise, and makes a sense of use better.

[0012]

The blowing nozzle 12 is arranged above near the hand insertion port of the hand insertion unit 3 with its ejection hole faced downward. High-speed air current is jetted through a blowing hole 13 formed in the blowing nozzle 12 to blow away waterdrops attached to hands inserted into the hand insertion unit 3, and waterdrops are removed and blown away from surfaces of the hands without rubbing hands together.

[0013]

The blowing hole 13 formed in the blowing nozzle 12 is formed to be a long slit in a width direction (in a front-back direction of the sheet surface of Fig. 1 or in a lateral direction of the sheet surface of Figs. 2 and 3) of the box body 1. As shown in Fig. 3, protrusion portions 12a are arranged near both edges of the blowing hole, respectively, in a width direction, that is, in a direction in which a flow path is reduced.

[0014]

The operations in the first embodiment that has the above-described configuration are explained. When hands that include even wrists are inserted into the hand insertion unit 3 from the hand insertion port 2, the hand detecting sensor 14 detects the insertion of the hands. Then, the high-pressure air current generator 8 is operated based on processing of the control circuit, and high-speed air current that has high motion energy is jetted into the hand insertion unit 3 from the blowing nozzle 12. As shown in Fig. 3, then, the slit is reduced in width by the protrusion portions 12a, and high-speed air current 15 is generated from the blowing hole 13.

[0015]

The high-speed air current 15 changes in section in response to its distance from a blowing port 5. An ellipsoidal-film-shaped air current 15a that is relatively large in width is formed near the blowing port 5 (Fig. 4(a), an A-A section of Fig. 3), an ellipsoidal-film-shaped air current 15b that is reduced in length of a long axis as the air current is separated from the blowing port 5 is formed (Fig. 4(b), a B-B section of Fig. 3), and the air current 15b is converted to an almost circular air current 15c that has a larger space

(Fig. 4(c), a C-C section of Fig. 3).

[0016]

Thus, it is possible to select and use the way of widely blowing away waterdrops attached to hands near the blowing hole 13 (for example, near the air current 15a), the way of intensively blowing away waterdrops attached to fingertips slightly away from the blowing hole 13 (for example, near the air current 15b), and the way of accelerating evaporation and drying with respect to the whole hands by rubbing hands together much away from the blowing hole 13 (for example, near the air current 15c).

[0019]

[Second Embodiment]

Fig. 5 is a plan view of blowing holes of the hand dryer according to a second embodiment of the present invention. The same reference numerals are given to the same components as in the first embodiment and the explanation is omitted.

The plurality of slit-shaped blowing holes is arranged, for example two blowing holes in the second embodiment, each of which has protrusion portions 12a arranged in the first embodiment in a width direction of the box body 1.

Thus, a range of drying hands is increased and drying efficiency is improved.

The other operations and effects are substantially the same as in the first embodiment and the explanation is omitted.

[0020]

[Third Embodiment]

Fig. 6 is a plan view of blowing holes of the hand dryer according to a third embodiment of the present invention. The same reference numerals are given to the same components as in the first embodiment and the explanation is omitted.

The slit-shaped blowing holes 13 each of which has protrusion portions 12a arranged in the first embodiment are arranged in a zigzag manner in the third embodiment. In other words, three slit-shaped blowing holes 13 are arranged in the width direction of the box body 1. A first blowing hole 13a is arranged in a first front row in a front-back direction of the box body 1 and a second and a third blowing hole 13b, 13c are arranged in a second rear row in the front-back direction at the same position. In this case, a distance between an edge of the third blowing hole 13c positioned in the second row and one edge of the first blowing hole 13a positioned in the first row is almost the same in the width direction as a distance between the other edge of the first blowing hole 13a positioned in the first row and an edge of the second blowing hole 13b positioned in the second row.

The other operations and effects in the third embodiment are substantially the same as in the first embodiment and the explanation is omitted.